

ABSTRACT OF THE DISCLOSURE

An amount of ASE generated changes due to a temperature and a signal input power of an optical amplifying unit and causes a fluctuation of a gain of the optical amplifying unit. A photodiode on an input side and a photodiode on an output side detect input and output powers, and a temperature detecting unit detects a temperature of an optical amplifier. A control unit corrects the amount of ASE generated based on the detected input and output powers and the temperature according to AGC control. Driving of an excitation LD is controlled by a corrected result, and a gain of the optical amplifier is kept constant.